People used their knowledge of food properties to ameliorate their physical condition. During lactation, for instance, women ate vegetables or not "depending on the condition of the baby," for breast milk was very easily affected by adverse properties. In the broader context of general dietary needs, people entertained ideas about the suitability of certain foods to certain ages, sexes, occupations, conditions, and occasions (Hauck, et al: 42-50). Nevertheless, persons often risked an undesirable effect in food for pleasure. The proper banana variety for ritual use was the tiny kluai nam, yet it was not planted much in Bang Chan because the people "did not like the taste." They substituted the "pleasant-tasting" kluai nam wā. Here orthodoxy came off second. The heat of alcoholic drink relished by men and older women often pressed the margin of safe temperature control. The cobra--turtle--or chicken--plus--alcohol feasts exemplified how readily the elders gambled even on the increment of sin from eating meat, or risked an over-heated temper, for the joy of eating such cherished delicacies.

Food dislikes, if temporary, reflected an imbalance of elements; if usual, an individual constitutional set of the person's elements. To eat disliked food was therefore positively harmful. To urge someone to eat disliked food was wrong.[16]

Illness

All illness, anxiety, and soul loss was caused by intrusions from outside the body. The intrusion might be from a supernatural source (wisāt:powerful) or natural (tām thammachāt) (Textor:10) but in either case the result was the same: disruption of the elements. Anxiety, whether caused by a social situation such as fear of frustration, by a broken bone or by a fever, also was a disruption of balance. An attack by the supernatural disease missile, "khun"[17] gave rise to the classic symptoms of wind-excess: "a man cried all the time and had flatulency." Elements were also disorganized by spirit attack. The victim suffered hysteria, paroxysm, flatulence, convulsion,

16. Phillips (p. 65) reported that parents did not give their child a disliked medicine because "it offends him.... It is better not to give it to him than hurt his feelings."

17. This small skin missile invaded the body and then expanded to the size of a buffalo. Intentional attack (sorcery) might kill; accidental, merely pained (cf. Textor:116-127). Suspected khun was one of the few reasons why a family would authorize so grave a violation of the body of a deceased member as an autopsy.

828 753 or fainting, and also such localized trauma as abcesses. Similar behavior followed the influence of malevolent magical amulets, incantations, and love magic. Natural intrusions may be exemplified by the seasonal influences of rain, which brought on too much water element; of heat, which increased fire; and of wind, which cooled too much or brought in certain fevers, e.g. north fever (khai nūa). An accident was a natural cause of disequilibrium. A cut might let out the air or a soul.

774 [761] [753] Any lost soul, if not restored, meant death. Souls were lost from falls or frights or from spirit attack, a condition recognized by persistent crying, hysteria, and unconsciousness. The exits were at the top of the head, the palms of the hands, and the soles of the feet, the latter 2 sometimes localized at the 2 thumbs and the 2 great toes. One of the old beliefs associated an element with one of the four čhĕttaphūt souls (Textor:130). When one of these souls was lost one whole element was gone. Loss of the khwan soul was more frequent than any other, especially during childhood. Its care throughout life was very much in mind. The khwan[18] played an [844] especially prominent part during childbirth.

755 [262] [757] If a person were only slightly sick, he might first try to overcome his physical complaint by attention to diet. Very rarely did he by himself buy some medicine at a drug store. If it were a case of a child's lost khwan, women performed the rite for its recovery. When the khwan of an adult was affected, men performed a strengthening rite (tham khwan), or a priest gave a holy water bath. If the person were very ill, holy cotton thread (sāi sin) was tied at wrist, ankle, and neck so as to shut off the soul exits. An elder relative or spouse might also "hon," i.e, vow food or liquor in return for the help of supernatural beings; or, with Buddhist "sacred things" in mind, promise the ordination of the afflicted person, or oneself, or some interested relative. In this case, the relatives had long since turned for help from the arts of medicine.

278 755 The Arts of Medicine

Medical knowledge comprised on the one hand a pharmacology of materia medica, and on the other, the far more important

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18. The conceptualization of this soul was Brahmanic in source, rather than Buddhist (cf. Martinie, 1952:370).

On the other hand, pregnancy was a period of uncertainty when a woman was easily upset emotionally. Because childbirth was "like a war" when a woman might die, "defeated by her pregnancy" (phaethong), she felt uneasy.[24] If she were frightened, her child's khwan would fly off in terror. The baby died in the womb if its khwan did not return. Because of increased sensitivity and vulnerability her elements and those of the baby were frequently thrown off balance. Wind easily entered through the thin skin of her stomach where she carried the unborn child. It caused pre-natal disorders all the way from queasiness and minor vomiting in early pregnancy to miscarriage and death. "A woman felt dizziness and numbness because of wind in the fetus. In a month she suffered a miscarriage."

A pre-natal pain that did not seem to be a labor-pain was diagnosed as the very dangerous naem, "a thick lump of blood and wind that moved quickly." As in other illnesses, element harmony was restored by medicines, holy water, and by modifications of diet.

Women knew of possible supernatural invasions of the womb during pregnancy. If a woman had beforehand lost a baby at birth or through miscarriage, and the body had not been properly buried, she might be seriously troubled by its restless ghost, fully as powerful, it must be remembered, as an adult's.

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24. The image of battle was traditional (cf. Anuman Rajadhon: 108). Phaethong (McF: 599), a combination of food craving and vomiting (Anuman Rajadhon:115) paralleled the dola-duka of Ceylon (cf. Obeyesekere), but without the hostilities built in by the Sinhalese.

844 fast enough to break the amniotic sac. Sāi made her a
[278] medicine of mung bean and sugar, both of which wet the uterus, and murmured some magic words to help. Later she worked with her hands at the vagina, twisting the sac a bit to break it. Suddenly the sac ruptured.

Now the child was almost there. The head showed well. Sāi sat down directly in front of Dūan to do the pressing herself. With one hand she held or gently pulled on the
[789] baby, with the other she pressed on the abdomen with every contraction. As she started in, she said magic words. She worked for an hour--no midwife would press more than that--until at last the child was out. A little boy! With her finger Sāi removed the blood from his mouth, and pucked out the lips. Breathing was slow in coming, so she shook him vigorously, then laid him down. Quickly she chewed up an onion and spit it over his body. "Ah-h-h!" A cry, though not very strong! Seeing the new baby appear, Chai, who up to then had been constantly near his mother, rushed precipitously from the house, and refused to come in for hours, in spite of Song and Lek's coaxing.

[787] Everyone had observed an auspicious circumstance: the cord was looped around the baby's neck! This imitation of the holy cord (mongkhon) placed around head and neck in Brahman rites of passage was a rare and good sign. "A cord looped thus could never kill a baby," someone said.

Since the placenta was slow in coming, Sāi prepared to cut the cord while Dūan rested and sipped the fiery snake brand medicine. Depending on circumstances she might cut it
[278] before or after the placenta was out. Taking a rhizome of phlai (Mcf. 604), a traditional healing root she laid it on a clod of soil brought in from outside. From one of the
[412] old bamboo house beams, someone had sliced with a knife a sharp-edged, tapering sliver to serve as a cutter. The cord was stroked 3 times, starting near the baby's stomach "to remove the dirt." Then "something that is in the umbilical cord" was pushed back towards the baby's stomach "to prevent
[778] a flow of blood." She measured the cord from the baby's abdomen to his knee, and tied off 2 places in it with the holy unspun cotton cord used ordinarily in rituals. Laying the part between the 2 knots on the phlai on its bed of soil, and saying her magic "w'nvān a sam pa nō," she cut
[757] the cord with the bamboo cutter. With a chicken feather which had to come "from the mother's yard," she collected a few spider webs from the rafters, mixed them with coconut oil, and painted them around and on the cord-stump, also "to stop the blood-flow." While doing this, Sāi said, "One midwife I know severs the cord by tying it with the thread at 3 places, then burns it with a flame."

846 789 782 Now that the fire was going nicely and Dūan was "ready to warm her body," the all-important prayer and incantation "to control the hotness and poison" of the fire had to be pronounced lest the mother's body be "swollen or burned." Sāi took raw rice, salt, and alcoholic liquor[36] in her mouth, chewed them, and sprayed them over the fire and over Dūan's body three times, saying "Spirit of the Fire and Wind, may both mother and baby be cool and happy!" and murmuring her secret formula with ancient Pali words about "great fire" and "death."[37] With the shoulder cloth (sabaichiang) that she always wore to the temple draped diagonally over her left shoulder and under her right arm, Dūan knelt and faced the fire. Praying for happiness to the Mothers of the Fire, Fire-floor, and Wind, and finally to the Lord Buddha, the Holy Brotherhood of Priests, and the Sacred Law, she bowed, hands clasped, and touched the floor three times with her forehead. Then she rose and lay down on the plank with the holy fire on her right side.

846 [757] [853] As Dūan was resting quietly, Sāi made three "taping fruits" (lūk prakhop), balls of tamarind leaves, phlai, and salt wrapped in cloth. One was put well up between Dūan's legs to cure the birth wound (phlāe). The other two were set aside for use on subsequent days. Sāi painted the baby's tongue with alcoholic medicine, and from her fingers dropped a little honey and boiled water into his mouth. Then she laid him on his tray on the floor close by Dūan, on the side away from the fire.

787 827 With satisfaction of a job well done, Sāi and Lek sat together for a quiet chew of betel. "Lek," said Sāi, "has it occurred to you on what a good day this boy has been born? It is a Saturday, so he will have power. Nothing, nobody, can hurt him! Once I delivered a boy on that best

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[273] [262] 36. Alcohol was heating; rice, strengthening. Salt appears to be drying.

[263] [776] 37. The deities addressed were māe phra phlōeng and māe phra phai. Another Pali-Thai magic formula to control fire was: "Phra Mōk Khan Lā Nō will extinguish the fire from hell, na mō phut thā ya." Phra Mogdallana, one of the two most faithful disciples of Buddha, caused the fires of hell to go out (cf. Anuman Rajadhon 1961:137). The na mō...etc. was a traditional phrase to prevent spiritual dangers and is a repetition of the names of the Buddha in five incarnations, past and future (cf. Textor 1960:483-485).

846 [514]

the fire for her during the first day or so, lest in her straining, Dūan's womb "move to a new place," but Duan did it herself thereafter. The smoke was harder on others than for her for she was on the floor. She could leave the plank to bathe and to relieve herself through a crack in the floor. As soon as Chāi got over being frightened of her turmeric-yellow stomach, he often came and lay beside her on the plank, though it was a squeeze! She took her medicine and often sipped hot water, feeling very modern with her brand-new thermos bottle. Constantly turning her back or front to the fire, she poked or dripped water on the flames to make coals. Once she tossed on a dry palm leaf, and as it flared up, put a cloth over her head to trap the smoke and heat. Though a rash developed on her body, she was complimented by Lek on the care she was taking of the heating and drying process. Unfortunately, a neighbor who wanted to help brought in some of the wood one day. Not remembering that to make noise with the wood caused diseased red eyes in the baby, she dropped the bundle with a crash! Alas, "sang" disease, of course, came at once. So the near-by mō who always cared for them had to be called, but he used no medicine. "For eyes red from 'sang'," he said, "never use any eye-medicine as drops, or they will be permanently damaged or blind. Such eyes have not enough resistance to win over the strength of the medicine. A drop of mother's milk, any mother's, in the eyes is the cure." [753] [757]

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Uterus pain was said to last one day for the first child, 2 days for the second, and so forth, increasingly. As Dūan seemed to be in considerable pain, Lek resorted to an old cure: she secretly took the bamboo knife and the phlai from the baby's tray and put them under Duan's plank bed without telling her. Slowly the pain diminshed.

846 789

If anyone spoke of uterus pain to her during the fire period, Dūan would suffer still more. If a visitor spoke of the hotness of the fire, little boils would appear on her body. The fire, being thus made too hot, would have to be put out, and Duan "would be weak for a long time." This was because actions or even words occurring beside the holy fire set a new and permanent pattern. Neighbor's children were kept away lest they inadvertently exclaim about the heat.

846 574

A few relatives with gifts of banana, turmeric, and face powder dropped in, but visitors mostly stayed away. "It is an ugly sight," said Dūan, "lying here with only a cloth over me, half naked and yellow, and I fear there might be an unpleasant smell."

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The winnowing tray, with the baby on a pillow now covered with a plastic cloth, rested on a low table, the legs of which stood in bowls of water to keep away ants. At first an old dome-shaped fish trap had been set over it to prevent draft and

846 [789] Seven days after the end of the fire period, Dūan sent a message to the mō to look in his book as to what direction from the house she should bury the phlai, the bamboo knife, and the pot with the now dried placenta and cord. She already knew some of the procedure: burying should take place on a Monday or a Friday; south was right during the first three months of the lunar calendar, November, December, January; and the full moon of the twelfth month (October) was especially good, for the moon waned thereafter. Chāi had been born in October, so north was right for him, but for a girl it would have been east. Song or Lek or anyone could bury the pot, but most mothers did it themselves. If it were buried in the wrong direction, the baby would die, and if not under a tree, he would leave them and their home, and roam. The instructions came. With the things in her hand, she walked toward a big jackfruit tree. Beside it was a sakāe. Either was good, so she chose the sakāe which, being nearer the house, might strengthen by that much the roots that would keep her boy at home. After burying the pot and all, she returned directly to the house, remembering to pick, as she came, a fruit, a vegetable, a leaf, and then a piece of wood, all useful things. In the house she added them to the usual household stores. By doing so, and by using them up shortly, she ensured that her new son would be a good worker, who on returning home would always bring something to add to the requirements and wealth of the household. Once buried, the placenta, "like ashes," was ignored and the spot forgotten.

846 262 [461] [753] [757] 862 Within a month after childbirth, Dūan was back at farm work, even to the back-straining pounding of rice in the big mortar. For three months she avoided fruits, particularly guava and jackfruit. Then, since the baby was thin, she gave up vegetables, especially gourds, corn, and the green plants that grew in the canal. One day, because she carelessly ate some salted field crabs, the baby got thrush on its tongue. They cured him by smearing the milky juice of a peel of kluāi nam banana on the cloth sheet covering his cushion, then wiping this on his tongue (cf. Anuman Rajadhon 1961:153). So the year passed, and then another. Not long after his third birthday, Dūan realized she was pregnant again, so took steps to wean him. She painted her nipples with "black medicine" (yā dam), a bitter and hot tasting ointment made from the boraphed rhizome (McF; 474). Then she sent the child over to her mother's older sister's house for four nights. To make quite sure, she followed an old ritual way, too. She boiled an egg hard and peeled it. Holding the egg behind her back, she turned her face away from her son, and handed it to him behind her so that she could not see his face. "Henceforth, you shall not nurse any more," she said. Without looking at him, she walked

Chapter VII

ATTITUDES TOWARD MODERN MEDICINE AND MIDWIFERY

Modern and traditional medicine appeared to Bang Chan to have much in common. Both subscribed to a belief in disruptive intrusions. In typhoid and cholera, the old scheme postulated intrusions of fire and earth. Boils involved a spirit attack or excess of fire. For these same disorders, new medicine spoke instead of virus or bacterial infection. Such concepts as nutritional deficiencies, insect transmission, and pollution, however, were alien to the old views as disease agents.

Modern medicines paralleled the old decoctions. Antibiotics, ointments, or pain-pills were appreciated for their efficacy, but evoked no surprise, for every plant in the world was said to have some therapeutic value. Injections were similar to the sub-cutaneous magical protective needle.

"Old" medicine did not feel threatened because people were not convinced that the modern was better. The 2 systems were viewed as different, each having its own specialties. The difference was sometimes phrased as "Old medicine cares for old ailments; modern medicine for new ones." Spirit possession and khun attack, for instance, were old ailments; poliomyelitis, gonorrhea, and maybe diphtheria, new (J.R. Hanks, 1955:155-195). It was sometimes better not to claim competence outside these customary lines. One mō said he could cure gonorrhea, but the young men preferred a city doctor. Sometimes, though, one could not be sure what was a new disease.

Another phrasing of the proper place for modern medicine was that because of varying "habit," differing social stations required differing medical techniques. "Modern medicine is only good for delicate city people or other kinds of farmers, but does not give enough strength for rice-farmers." The orchardists below Bangkok who "had the habit of eating a lot of fruit," and the teachers and traders of Bang Chan (who went to the second class practitioners, and occasionally to modern doctors) were assumed to have different physical needs than farmers. The post-partum fire was clung to as strength-making: "woman are weak if no fire." The hot ashes chamber, introduced from Bangkok, was for the most part used by non-farm women.

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178 An old woman summed up significantly 2 attitudes saying, "In the old days people made more merit and so lived
812 longer, but because we had no hospitals, the children died
782 younger." The relation of good health and longevity to proper religious and moral behavior was fundamental in Bang Chan. If merit did not suffice, medical attention, traditional or modern, could not prolong life. Children,
855 however, were tender (ɔ̄n) and easily prey to sickness.
958 Traditional care could help them, but being delicate and
178 tender like city people, children could also be helped by modern hospital care.

757 Between the 2 systems people sensed little conflict, for each patient made a preliminary diagnosis of his symptoms and sought the type of assistance his diagnosis and
755 convenience indicated. Mɔ̄ with some knowledge of both
178 systems might offer their patients a choice of remedy. With the right diagnosis, magic, and medicines, a quick cure was expected. if not forth-coming, people were disappointed and moved to another specialist for his help. Modern medicine merely took its place as one more recourse.

The basic handicap of modern medicine was that it had no magical resources or holy water. "Its effectiveness is limited to the properties of the ingredients." Old medicine on the other hand had, in addition to these properties, "The strength of the mɔ̄'s incantation plus the power of every person who learned and used that incantation, back to the time of its discovery, centuries ago." Thus where the medical schemes offered the same specialty, as in fevers, bone-setting, or obstetrics, the old appeared to offer more resources.

743
758 Besides its deficiencies in magic and strength-making
178 attributes, modern medical care had other drawbacks. First, it was not accessible. A trip to Bangkok for medical purposes involved far more time than a day. Minburī's Health Center was a feasible trip, even for a woman in labor (stays ranged from 6 to 24 hours). Home arrangements for tending children, feeding buffalo, and other chores were less demanding. Bang Chan's eagerness for local modern care was shown when a Bangkok physician visited Bang Chan for a few times as part of a nutrition study. He was besieged with private requests for medical advice. Secondly, modern medical care was expensive. In Bangkok, after the expense of getting there, taxis, food, and housing costs for accompanying relatives, hospital, and doctor's fees sometimes meant losing the family gold and even land. Minburī's costs were closer geared to farm income, but medicines appeared costly. "Modern drugs taste and act better, but the poor have to use the old." Third,

Chapter VIII

CHANGES

In studying change in the customs surrounding childbirth in Bang Chan, we have D.B. Bradley's description of birth in Bankok in 1865 as a base-line on which to project our findings. Since most of the population of Bang Chan (Thai, with a few Laotians, Mon, Muslims, and Chinese) stems from Bangkok, we may reasonably assume that the parallels derive from a true historical connection. Bradley's description fitted Bang Chan as if written today:

> "Siamese theory in regard to the part which external and internal fire plays in the functions of life and health is made to work powerfully...There is, at such times, a diminution of heat in the body, and consequent liability to stagnation of the blood, which, if not guarded against by fire, will leave the uterus flabby and enlarged, bad humors in circulation, a consequent weak state of the stomach, resulting in the secretion of too little milk, and that of a bad quality for the child, all of which will be likely to be followed by a host of other fearful maladies to both mother and child...[Thus a woman lies by the fire]... exposing all parts of her body, and more particularly her abdomen, to that drying process, so that the uterus shall be forced to shrink up quickly to its normal dimensions, and the sanguineous streams which had been diverted to support the child before birth, shall, by fire, be driven backward to their more usual limitations, all which is...a sine qua non to a sound constitution and good health in the future..." (Bangkok Calendar, 1865:78-84).

Bradley showed that some behavior one might call "change" today was a recognized alternative in 1865. For instance, in Bang Chan a few women "are made too unhappy (klum) by the fire so cannot use it. They should take extra amounts of pickled medicine" (yā dong). Bradley wrote, "a few delicate females...who cannot endure [this] usual treatment, are compelled, against all their ...fears of the consequences, and all the importunities of their

friends to say positively that they cannot and will not endure it. For such, some other course has to be taken by the use of ...medicines" (p. 81).[74]

The most noticeable modification in the customs of childbirth was the shortened fire-rest which had shifted from 29 or so days, to 9 to 15 or less; this was practiced by everyone.[75] Another conspicuous change adopted by a few dozen persons was the substitution for the open fire of a heat-making contrivance, in particular the hot-ashes or charcoal burning container (chamber or fire-box: fai chut) and the hot water bottle. (The hot brick and wrapped pot of hot salt were probably old alternatives.) New, of course, were the occasional utilization of the Mīnburī Health Center; the second class doctors; and, somewhat more generally, the novelties of the market, such as flowered net-frames, mits, shirts, pillowcases, and pacifiers. There were a few other changes noted.

Who took up the innovations? First, they were women who had already successfully borne a child, undergone a full fire-rest, and were bearing their second or later children. Being already ritually mature (suk) and of proven competence in childbearing, they had no reason to fear a change and nothing to lose. Age and experience gave them the self-confidence, authority, and interest to ponder their experience and decide on ways to increase their effectiveness and their comfort. They had the right to do so because of the fundamental autonomy of the individual. Strong-minded old ladies might criticise the substitution of the hot-ashes container for the fire, feeling it was not hot enough to do the job, but they never questioned the woman's right to do so. The least likely to adopt

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74. On the other hand, Bradley (pp. 82-83) was puzzled why his success in saving the life of so revered a personage as the Queen by taking her off the fire, a move so thoroughly approved by the King, did not cause universal abandonment of the fire-rest. He was not aware that many a mō did the same (with the possible exception of the sponging with tepid water), that as a mō-with-a-particular-specialty he could do anything he wanted but no one would copy it without personal formal authorization, and that he was up against the deeply-rooted rite of female maturation concerning which even royalty had no authority (Bangkok Calendar, 1871:107-109).

75. We have no data on whether this shortening process set in in the 1930's, or after World War II in the late 1940's. The month-long rest was universal in the 1920's.

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164 Considering deciduous tooth only, in a group of 173 children, 93 boys and 80 girls who had deciduous tooth, 56% of the boys and 50% of the girls were free from caries. The average number of carious deciduous teeth per child was 1.4 and 1.5 for boys and girls respectively. For those with caries experience, the number of carious deciduous tooth per child was 3.2 for both boys and girls.

In the entire group of 226 children, 76% of 116 boys and 60% of 110 girls were free from caries of permanent teeth. The average number of carious permanent teeth per child was 0.5 for boys and 0.9 for girls. For children with caries experience, the figures were 1.9 and 2.3 for boys and girls respectively. None of the 30 boys with caries of permanent teeth had more than 4 such teeth, whereas 5 of 43 girls had more than 4 carious permanent teeth.

164 171 Data for children aged 12 to 14 in Galesburg, Illinois and Colorado Springs (Dean et al. 1942) have been chosen for comparison of caries experience in permanent teeth, with that in Bang Chan. In these cities, the fluoride content of the water is conducive to low caries incidence, yet the percentage of children aged 12 to 14 having caries experience was 72.2 and 71.5 for Galesburg and Colorado Springs, respectively as compared to 41% for Bang Chan, and the number of DMF[1] permanent teeth per child was 2.36 and 2.46 as compared to 0.88 carious permanent teeth per child in Bang Chan.

The reason for the relatively low incidence of caries among children in Bang Chan cannot be stated with certainty. Similarly low or even lower caries incidence has been reported for certain age groups of children in various parts of the world, for example in North China (Afonsky, 1951), in the northern islands of Samoa where the people had little access to store foods (Losee, 1952) and in a small isolated village in Greece [146] (Phillipas, 1955). One thing which residents of Bang Chan appeared to have in common with such other populations which are relatively caries free, was low intake of sugar[2], particularly in a form which would be apt to adhere to the teeth.

• 757 Restoration of Decayed and Missing Teeth. - None of the children examined had any filled teeth. Up to 44 years of age, the adults examined had retained almost all of their teeth, and [145] no evidence of restoration, other than crowning was noted. Decline in average number of teeth was marked after age 55.

Of 92 adults with teeth, at least 7 men and 6 women had been to a dentist as evidenced by the presence of crowned teeth

1. DMF denotes decayed, missing and filled. Children in Bang Chan had no filled teeth.

2. Sudsaneh (1956) found the average per capita intake of sugar in 11 families to be only 6 grams per day.

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757 in their mouths. More than half of the teeth crowned were said to have been sound, and no crowned molars were noted. The services of a dentist appear to have been sought more for their cosmetic value than for dental care as such.

276 164 Betel Chewing and Dental Health. - Betel chewing was not habitual with any of the adults under 25 years of age who were examined. Among adults above this age in the random sample, 13 of 29 men, or 45%, and 34 of 40 women, or 85% chewed betel. The group of adults from 25 to 44 years of age was singled out for study of caries incidence in relation to betel chewing, since adults retained most of their teeth up to this age. Among 19 betel chewers, 3 persons had 5 defective teeth whereas among 19 non-betel chewers, 7 persons had 46 defective teeth. Others (Gerry et al. 1952; Shouric, 1948) have reported a lower incidence of caries among betel chewers than non-chewers. Caution must be used in interpreting our observations, however, because the sample is small, and the teeth were not cleaned before counting caries. Stain and calculus may have obscured small caries in betel chewers.

The impression was gained by casual observation that protruding incisors were common among habitual betel chewers, and that the teeth of some betel chewers appeared to be loose. Since such protruding incisors were not noted among the school children, nor among non-chewers, we associated them with habitual betel chewing. Both Gerry et al. (1952) and Balendra (1949) noted a higher incidence of gingivitis among betel chewers than non-chewers. Since most of the older persons in our sample chewed betel, our data offered no clue as to the possible effect of betel chewing on the loosening and loss of teeth among older persons. Another item of possible importance, and on which we have no data, is the extent to which tobacco is used as an ingredient of the mixture which is spread on betel leaves.

276 146 Platt (1945) considered betel chewing as a potential source of calcium in the diet. He stated that the amount and utilization of calcium ingested with 6 betel leaves was similar to that from 10 ounces of cow's milk.[1]

The amount of calcium ingested in this way doubtless varies not only with the frequency of betel chewing, but also with the amount of juice swallowed. In Bang Chan, spitting out the juice appeared to be more customary than swallowing it.

276 Further research is needed to decide whether the potential disadvantages of betel chewing outweigh its potential benefits. Moreover in any attempt to decrease the practice of betel

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1. Platt, 1945. Footnote, p. 21.

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344 mats on the floor as most of them would have done at home.
[743] Relatives were welcome; indeed they were supposed to come and help.

164 Nature and Incidence of Illness and Injury, and Treat-
12 ments Sought by Residents of Bang Chan. - Evidence concerning the nature of illness and injury in Bang Chan was obtained in connection with the clinical examination of school children and persons in the random sample of village households; from questions in two types of structured interviews with household heads: 1) in the entire village, and 2) in one hamlet, KY-7; and from the field notes of workers associated with the Cornell Thailand Project.

164 In connection with the clinical examination, information was obtained from heads of 30 of the 31 households whose members were examined (See schedule in Appendix A).[3] In this group, none reported any accident or injury, and 26 said that no member had been ill within the year. Illness was reported as occurring in 4 households only. In one of these, a 49-year old man reported loss of sensation over the extremities and other symptoms which led the physician in the research group to conclude that he had beriberi. As treatment, this man had used an herb recommended by a priest, a native medicine given him by a neighbor and had gone to a private clinic at Minburi where he received an injection.[1] In another family, a 39-year old man who had asthma, took an advertised remedy which he purchased from a drugstore. Two children in the third family had fever for 8 days, for which a traditional practitioner prescribed herbs. In the fourth family, a 1-year old child with eczema was taken first to a traditional practitioner, then to a private clinic in Minburi where he was given an injection.

164 On the basis of other observations, however, we believe
128 that illness and injury are more common in Bang Chan than is suggested by the replies to this particular inquiry. For example, no mention was made in one of the households surveyed of a baby who had been too ill to be weighed and measured, when team members called, and who recovered in a day or two without outside help. Coming as they did at the end of the clinical examination which was new to most of these people, perhaps the questions asked seemed relatively unimportant. No attempt was made to probe beyond the person's reply to the questions as stated.

164 Replies to questions in connection with an intensive

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1. From casual observation, one is led to believe that the villagers have considerable confidence in "injections," although the nature of the injection received or desired, is not usually specified.

[3] [see p.51-Analyst]

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164 survey made in one hamlet, KY-7, give a rather different picture of the extent of illness and injury in Bang Chan, if the situation in this hamlet is at all representative of the whole. Hanks (1954), found that serious illness had occurred within the previous year in 17 of 38 households[1] in the hamlet KY-7. Twenty-four persons of various ages were involved, and the illnesses were described as lasting from a few days to 3 years. Specific diseases were mentioned in 7 cases: diphtheria, typhoid fever, pneumonia (2 cases), malaria and beriberi (2 cases). In the majority of instances, however, symptoms rather than diseases were mentioned, i.e. fever, diarrhea, pain in chest, disorder of throat, lung complaint, swollen foot, and the like. One case, described as a wound in a 5-year old child, might have been due to accident.

•757 In all, the 24 ill persons obtained a total of 40 "treatments,"[2] from one to four types of treatment per patient. Treatment by modern doctors was used more frequently than other means of help (Table 15) although such treatment is not available within the community of Bang Chan. Fifteen of the 24 persons who were seriously ill had treatment by modern doctors, several patients receiving treatment from more than one. Thirteen patients had one type of treatment only (as that from either traditional practitioner or modern doctor), 7 used 2 types, 3 used 3 types, and 1 had 4 types of treatment from 5 individuals. The latter case was that of a child who was described as sick for 60 days with pneumonia, neck swelling and fever, and was treated by a traditional practitioner, two priests who were also traditional practitioners, and a medium, all in Bang Chan, and a second-class doctor in Minburi. Another child who was sick with lom sandan (faintness, weakness or loss of consciousness) for three days was treated by 4 local traditional practitioners and a second-class doctor at Minburi. One child with saang (a disease of young children, said to be caused by the loss of the soul or spirit) was treated by the modern doctor at Minburi, only.

757 As a rule, local practitioners of one sort or another
757 were visited or called first, those in Minburi next, and those in Bangkok, only after nearby help had been consulted. This order was not invariable however. For example, in the Hamlet KY-7 series (Hanks, 1954) was one woman who was sick with beriberi for about 8 months after childbirth. She went first

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1. Interviews were not obtained with 3 of 41 household heads in the hamlet.

2. Each type of practitioner, as traditional practitioner or modern doctor, was counted as a separate "treatment."

[TEXT CONTINUED ON PAGE 37]

A [See p.36-Analyst].

Table 15

Treatment Used For Serious Illness by 24 Persons in 17 Households, Hamlet KY-7

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Specified Treatment	Locality			No. of Persons Treated
	Bang Chan or adjoining area	Minburi	Elsewhere[2]	
Persons consulted:[1]				
Modern doctor[3]		18(21)	4(7)	19
Traditional practitioner	11(14)		3	11
Priests	3 (4)		1	4
Muslim masseuse	1			1
Medium	1			1
Medicines used without advice of practitioner:				
Purchased from market			1	1
Obtained from neighbors	1			1
Home remedies	2			2
Total	19(23)	18(21)	9(12)	40

1. Figures indicate the number of persons who had the specified type of treatment, not the number of visits or treatments. The higher numbers in parenthesis indicate that in some cases a patient consulted more than one person in a category, i.e. more than one traditional practitioner or modern doctor.

2. Modern doctors in Bangkok and Tonburi, and at Don Muang; traditional practitioners at Chachoengsao, Bangkok and in the rural area near Bang Chan.

3. Doctors most often visited in Minburi were "second-class," i.e. not graduates of medical schools, but persons with a limited amount of training in modern medicine.

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757 to a second-class doctor in Minburi, then to a nearby Muslim
759 masseuse, then to a local traditional practitioner who gave her some jaa tom (cooked medicine). Another instance, recorded in the field notes, is that of a school teacher's baby who had abscesses on her head. The mother took her child first to Minburi, where she was given an injection and a sulfa drug to be taken orally. The child did not get well immediately, and before all of the drug had been taken, the mother took the child to a local traditional practitioner who gave her a decoction of herbs which was to be given by mouth. Thus in some cases, modern doctors were consulted first, and local traditional practitioners later, if relief was not as speedy as was expected. The experience in this one hamlet suggested a willingness to try a variety of treatments, and the existence of a considerable degree of confidence in modern medicine.

758 According to Ralis (1955), 213 of 335 household repre-
743 sentatives interviewed had visited a clinic or hospital. Of these, 156 had gone to Minburi, and 135 to hospitals or clinics in Bangkok, some having gone to both places. Of 258 hospital or clinic visits, 125 were for treatment or hospitalization; the bulk of the rest were to accompany patients or to visit hospitalized relatives or friends. No significant difference in reports about seeking treatment or hospitalization was found between groups of persons differing in literacy, or in socio-economic level.

144 Infectious disease. - The principal evidences of infectious disease noted in the course of the clinical examination for assessment of nutritional status were trachoma and smallpox scars. Occasional cases of ringworm and other fungus infection, and of pediculosis were observed by the physician.

When the 233 school children and 148 additional persons included in the random sample of village households are considered together, i.e. a total of 381 persons or more than one-fifth of the total population of the village, only 3% were found to have trachoma. Eleven of 13 cases found were among 237 children 7 to 14 years of age, i.e. an incidence for this group of 4.6%. Zimmerman (1931) reported 119 cases or 4.3% of all persons examined in Central Thailand, and 277 cases or 2.9% of persons examined in the whole Kingdom. Among the school children examined, however, he reported an incidence of 12.6%.

Of 381 persons examined in Bang Chan, only 10, or fewer than 3% had smallpox scars. Two cases only were in adults, the remaining 8 being among children of school age. Our records do not show when the most recent cases occurred in the village.
751 According to Zimmerman (1931), 88% of over 2200 school children examined had been vaccinated. No information was obtained concerning the proportion of residents of Bang Chan who had been

121 I recall seeing portable motors stored in some Bang Chan houses and
[243] can still picture many threshing floors with neatly layered heaps
[244] of rice straw where the mushrooms grew. A few of these apparently "progressive" farmers had special ponds to which they proudly invited me to watch the feeding of the tilapia fish. Occasionally one of them seized the opportunity of my visit to inquire about sending a sick kinsman to a Bangkok hospital. Without Dr. Goldsen's analysis I might easily have been lured to generalize that certain farmers were "innovation minded."

*177 The survey's evidence against a general "innovation mindedness"
*178 cautioned me to reconsider my impressions. I realized that it would
121 be an oversimplification of the social network in Bang Chan to
621 think of it as containing a group of "progressives" who sought avidly each new agricultural wrinkle and who pitted themselves against another group of "conservatives" who resisted change. Instead I was led to see some farmers interested in certain new things, others indifferent to these but interested in other things. Bang Chan looked more like a mosaic of small groups, each fitting or rejecting the new according to its circumstance.

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*178 Instead of thinking simply of a group of highly motivated,
243 wealthy farmers who assumed the responsibility of trying out the
244 new for the benefit of their less affluent neighbors, I was alerted to recognize a variety of kinds of innovation. Innovation in growing rice, where one might employ a motor or fertilizer, differed considerably from earning extra cash during the dry season by growing mushrooms. The analysis of the survey evidence made me sensitive to the realization that mushroom culture was clearly a seasonal activity requiring little investment and open to any family, rich or poor, that needed cash. Certainly no genuine rice farmer would permit this extra work to interfere when the rains called time for ploughing. The finding that no correlation existed between acceptance of motors and growing mushrooms seemed in retrospect clear, almost self-evident.

*177 The survey analysis indicating that owning a motor, despite
182 my initial impressions, bears no relation to use of modern medical
244 facilities, made me reexamine my initial impressions. My own studies had made me aware that making a living is a positive
• 767 action among Bang Chan farmers: it requires forethought and will. Health, however, for Bang Chan is a kind of negative entity to be taken for granted until sickness arrives. Bang Chan has no vitamin pills nor tonics to maintain health, though all work actively to relieve sickness. Growing mushrooms and using modern medical facilities are phenomenally different undertakings. Certainly the survey analysis in this regard bore out and corroborated this "thematic" analysis.

#128 511 crop year. Except for a few exceptional cases, no new item appeared during the few months that lapsed because rice farmers customarily make their major purchases during the dry season following harvesting time. Special expenses of the 96 continuing families during the period from March, 1948 to February, 1953 were shown in Table 57.

511 Some explanations are necessary for Table 57. In the first place, whereas ordinary household expenses are estimates based on experience of farm operators, these special expenses are actual amounts spent during the specified period of five years. [432] Most of the expenses on land purchases were down payments and subsequent partial payments. Of the four families reporting purchases of household equipment, three bought guns and one bought a sewing machine. [759] [755] All major repairs were for dwellings. The major medical expenses did not include small amounts of money regularly spent on drugs for headache and stomachache or even on delivery of babies which was done by traditional midwives whose fees were nominal. In fact, there were only three cases of major medical expenses. The largest one included [525] Bangkok hospital bills amounting to 14,000 baht. The 36,190 [484] baht of odd expenses included 3,000 baht on gambling(only [691] two operators reported expenses on this item, others admitted win and losses but did not give the amounts), 2,000 baht on purchases of government lotteries which are issued once a week and also on several other occasions, 500 baht on legal prosecution, 300 baht on reward for the

[TEXT CONTINUED ON PAGE 331]